

**Hebgen Lake Estates County Water and Sewer District
Wastewater System Improvements**

Final Report

**Department of Natural Resources and Conservation
RRG-12-1487**

March 22, 2013

**Grantee: Hebgen Lake Estates County Water and Sewer District
P.O. Box 225
West Yellowstone, MT 59758-0225
Telephone: (406) 539-0386**

**Grantee Consultant: Great West Engineering, Inc.
P.O. Box 4817
Helena, MT 59604
Telephone: (406) 495-6189**

Project Funding

**Renewable Resource Grant: \$100,000
Treasure State Endowment Program Grant: \$720,000
Water Resources Development Act Allocation: \$255,000
SRF (A) Loan: \$166,200
SRF (B) Loan: \$498,800
SRF (C) Loan: \$218,000**

Total Project Cost: \$1,958,000

Prepared by



1. Introduction:

Describe the project history, project location and the purpose of the project.

The Hebgen Lake Estates County Water and Sewer District (the District) is located on Hebgen Lake approximately 10 miles northwest of West Yellowstone. The District's wastewater system consists of a single aerated lagoon followed by three infiltration/percolation (IP) cells. Wastewater is collected by a gravity collection system and delivered to a wet well, submersible pump lift station where the wastewater is then pumped to the aerated lagoon. After treatment in the pond, effluent is discharged to the infiltration/percolation cell. The original approval for this system appears to have occurred in 1974 and consisted of a package activated sludge process with disposal to infiltration cells. Sometime later, possibly in 1975, this approval was amended to utilize an aerated pond instead of a package plant.

On December 8, 2003, the Montana Department of Environmental Quality (DEQ) issued Gallatin County (the predecessor of the District who operated the system as RID 322) a Violation Letter, informing the County that the lagoon liner appeared to be leaking and that nearby monitoring wells exceeded the water quality standard for nitrate a violation of the Montana Water Quality Act. Gallatin County responded with a report assessing the condition of the wastewater system as compiled by Morrison-Maierle, the engineer for the RID and the original design engineer of the system. An application for a discharge permit was prepared, with the plan to bring the lagoons up to current standards. The discharge permit application was submitted to DEQ in December 2003 and the facility system report was completed in January 2004.

The discharge permit was not approved because the County could not adequately demonstrate that lagoon rehabilitation followed by discharge by IP cells to groundwater would comply with Montana's Water Quality Standards. DEQ sent another violation letter notice on May 31, 2005 notifying Gallatin County that the system was still out of compliance and demanding that the County take corrective action. Gallatin County responded by noticing and then hiring Great West Engineering to develop a Preliminary Engineering Report (PER) and a preferred alternative to bring the system into compliance. A Notice of Violation and Administrative Order on Consent (AOC #1) was issued DEQ to Gallatin County in November 2005 requiring the system be in compliance by 2008.

The PER was completed in 2006 and submitted to the Treasure State Endowment Program (TSEP) for review. The preferred alternative was to pursue the siting, permitting and construction of a facultative lagoon with spray irrigation disposal of effluent. The legislature approved the use of TSEP grant funds for the design and construction of the facility in 2007 and adjoining landowners were approached about easements or sale of land for spray irrigation. In 2007, local residents petitioned and then voted for the formation of the water and sewer district. The District began conducting due diligence to determine if it could successfully upgrade the system to compliance and then initiated negotiations with DEQ regarding the AOC and the Owner's Association, and Gallatin County to transfer property, assets, responsibilities, and liabilities for the operation of the water and wastewater facilities.

After holding a series of meetings and discussions, it became clear that neighboring landowners, including the United States Forest Service, were not interested in selling land or easements for the treatment and spray irrigation site. Other alternatives were evaluated, including pumping effluent to a remote location several miles away for disposal, and pumping effluent to the Town of West Yellowstone for treatment and disposal. These alternatives were found to be not feasible or

prohibitively expensive. Then, the preferred alternative became the mechanical treatment plant (sequencing batch reactor, SBR) with associated high costs for O&M.

It became apparent that the cost and operational requirements of the SBR system were prohibitive and that the original compliance schedule was not feasible, therefore, the District held meetings with DEQ in October 2008 and April 2009. Discussions at these meetings resulted in three key decisions that allowed the development of the present treatment alternatives. These decisions included:

1. The District could consider a phased system instead of constructing to full-buildout.
2. The District could use actual wastewater flow data that accounts for occupancy, to develop the design flow criteria.
3. The District could use ground-water flow and nitrate concentration data to evaluate the ground-water conditions as required for a discharge permit application.

These decisions enabled the District to consider other treatment alternatives that are less expensive and easier to operate than the SBR. DEQ also agreed to revise the AOC if the District would take ownership and responsibility for the system.

In July 2009, Gallatin County and the Owner's Association officially transferred the assets and operation of the water and wastewater systems to the District. The District also successfully negotiated a new compliance order with DEQ. The original TSEP grant award was declined, and plans were made to prepare another PER and funding applications to design and construct a wastewater treatment facility that will bring the District's system into compliance with the terms of the AOC and water quality standards.

The purpose of the wastewater system improvements project is to bring the District's wastewater system into compliance with the Water Quality Act. If continued development were allowed without improvements to the system, the groundwater aquifer supplying water to the District's public water supply system could become polluted. Replacing the force-main and lift station will bring increased reliability to the collection system and significantly reduce the potential for sewage discharges and human exposure to raw wastewater. Treatment of the wastewater by a Level 2 system and the discharge of effluent in conformance with a ground-water discharge permit will protect the quality of underlying groundwater, eliminate health hazards, and bring the system into compliance with Montana water quality standards. Correcting the District's wastewater treatment problem will also reduce uncertainty and protect property values.

2. Discussion and Results:

- A. Document that the project goals, objectives and tasks identified in the contract agreement were completed:

To address the above listed deficiencies, the following scope of work was described as the objective of the Renewable Resource Grant awarded to the District by the Montana Legislature.

- Replace the existing system with a level 2 treatment system and drainfield
- Construct a new lift station
- Remove and dispose of sludge from the existing lagoon

The improvements that were completed by Edstrom Construction on November 27, 2012 include the new lift station, along with 482 feet of 4" HDPE sewer force main, two 48-inch manholes, 60 feet of 10-inch gravity sewer main, and other ancillary improvements.

A fully executed copy of the Certificate of Substantial Completion has been submitted with this report.

- B. Summarize any problems encountered and solutions adopted. What would you do differently?

The problems encountered during the development of the project were minor and were essentially limited high ground water and the size of the pumps installed in the lift station. The District worked with contractor and the pump manufacturer to develop a solution, which was to install longer impellers on the pumps. The problem was successfully addressed and the lift station is operating efficiently.

3. **Public Benefits:**

List the anticipated overall public benefits of the project as stated in the grant application. Were these benefits realized? If not, explain why.

The public benefits listed in the application included:

- The replacement of the aerated lagoon with a modern treatment facility and the old lift station will result in better treatment of wastewater and will reduce the risk of equipment failure that may result in sewage backup and the direct exposure of sewage to humans.
- It will improve and protect both surface water (Hebgen Lake) and groundwater quality by eliminating pollution.
- Recreation, agriculture, wildlife, and human health will benefit from the elimination of pollution.
- In addition to fishery improvements, recreation is also enhanced by protecting and improving wildlife habitat, which improves hunting, bird watching, and other recreational opportunities.
- The project will encourage community growth and economic development and allow the District to come into compliance with regulatory requirements.

The construction of the packaged lift station and force main significantly reduces the risk of sewage backup and the direct exposure of humans to untreated sewage.

4. **Grant Administration & Project Costs**

- A. Budget: Include a summary of how the monies were spent by budget category and source of funding. Was the project completed according to budget? Explain any cost overruns or savings. Discuss any unbudgeted expenses that arose over the course of the project.

The original construction budget for the installation of the lift station and force main was \$204,456.00. The final construction budget amount is \$208,257.00. The District approved two change orders that have resulted in a net change of \$3,801.60.

A copy of the current Status of Funds and Invoice Tracking spreadsheets are attached to the fourth draw from the DNRC grant that was submitted with this report.

- B. Identify the matching funds that were to be spent according to the Grant Agreement. Document that these funds were spent. If not all matching funds were spent, explain why.

The date the project was determined to be substantially complete by the Project Engineer was September 28, 2010 and 89.4% of the project's matching funds have been disbursed.

The original Summary of Matching Funds found in Attachment B of the grant agreement included the following:

Treasure State Endowment Program Grant	\$720,000.00
SRF Loan	\$620,000.00
<u>Project Sponsor</u>	<u>\$ 0.00</u>
Total Cost of Project	\$1,340,000.00

The following is the project's actual Summary of Matching Funds as of March 22, 2013:

Treasure State Endowment Program Grant	\$146,705.13
SRF Loan	\$ 0.00
<u>Water Resources Development Act</u>	<u>\$255,000.00</u>
Total Cost of Project	\$401,705.13

The project budget has a balance of \$1,456,294.87, which includes the entire SRF loan and \$573,294.87 in the TSEP grant. These funds will be used by the District to complete the construction of the District's new wastewater

5. Project Completion and Certification

- A. Project Sponsor's Certificate of Compliance - Attached
- B. Engineer's Statement of Final Completion (if applicable) - Attached

FINAL REPORT
CERTIFICATE OF COMPLIANCE

Project Sponsor: Hebgen Lake Estates County Water and Sewer District

Name of Project: Hebgen Lake Wastewater System Improvements Project

I, the undersigned, being duly qualified, respectfully, of the Hebgen Lake Estates County Water and Sewer District, in the County of Gallatin, State of Montana, do hereby certify that the above-named project is in full compliance with all of the covenants and conditions set forth in Grant Agreement Number **RRG-12-1487** between the Hebgen Lake Estates County Water and Sewer District and the State of Montana, Department of Natural Resources and Conservation.

District President Myron Moore


Authorized Signature


Date

FINAL REPORT
STATEMENT OF COMPLETION

Project Sponsor: Hebgen Lake Estates County Water and Sewer District

Name of Project: Hebgen Lake Estates Wastewater System Improvements

I, Todd Kuxhaus, a Registered Professional Engineer in the State of Montana, license number 14539PE, do hereby state that the above-named project was completed according to the approved plans and specifications. I further state that the record ("as-built") drawings for this project are a true and accurate representation of the completed construction.

Todd Kuxhaus
(Name)


(Signature)

P.E. Number 14539PE

3/22/2013
Date

Great West Engineering, Inc.
PO Box 4817
Helena, MT 59604

Certificate of Substantial Completion

Project: Lift Station and Force Main Improvements

Owner: Hebgen Lake Estates County Water and Sewer District

Owner's Contract No.:

Contract: Base Bid

Engineer's Project No.: 1-08132

This tentative Certificate of Substantial Completion applies to:

☒ All Work under the Contract Documents: ☐ The following specified portions of the Work:

November 16, 2012

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

☒ Amended Responsibilities

☐ Not Amended

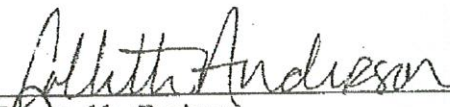
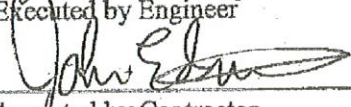

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

See attached letter from the Contractor's subcontractor Waterworks.

The following documents are attached to and made part of this Certificate:

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

 Executed by Engineer	<u>3/8/13</u> Date
 Accepted by Contractor	<u>3/8/13</u> Date
 Accepted by Owner	<u>3/11/13</u> Date

HEBGEN LAKE ESTATES
UNIFORM STATUS OF FUNDS SPREADSHEET

UNIFORM STATUS OF FUNDS SPREADSHEET FOR: Hebgen Lake Estates Wastewater Improvements																								3/8/2013			
ADMINISTRATIVE/ FINANCIAL COSTS:	Funding Source: TSEP Grant (MT-TSEP-CG-10-497)				Funding Source: DNRC Grant (RRG-12-1487)				Funding Source: SRF (A) Loan Forgiveness				Funding Source: SRF (B) Loan				Funding Source: SRF (C) Loan				Funding Source: WRDA W9128F-12-3-0003				Total Budget		
	Budgeted	Previously Expended	Amount of Draw	Balance Remaining	Budgeted	Previously Expended	Amount of Draw	Balance Remaining	Budgeted	Previously Expended	Amount of Draw	Balance Remaining	Budgeted	Previously Expended	Amount of Draw	Balance Remaining	Budgeted	Previously Expended	Amount of Draw	Balance Remaining	Budgeted	Previously Expended	Amount of Draw	Balance Remaining	Budgeted	Expended	Balance
Personnel Costs	\$ 2,000.00			\$ 2,000.00				\$ -				\$ -				\$ -				\$ -	\$ 2,000.00			\$ -	\$ 2,000.00		
Office Costs	\$ 1,417.00			\$ 1,417.00				\$ -				\$ -				\$ -				\$ -	\$ 1,417.00			\$ -	\$ 1,417.00		
Professional Services	\$ 23,000.00	\$ 12,695.40		\$ 10,304.60	\$ 6,716.31	\$ 6,385.56	\$ 330.75	\$ -				\$ -	\$ 5,500.00			\$ 5,500.00				\$ -	\$ 6,000.00	\$ 6,000.00		\$ -	\$ 41,216.31	\$ 25,411.71	\$ 15,804.60
Legal Costs	\$ 1,500.00	\$ 782.80		\$ 717.20				\$ -				\$ -				\$ -				\$ -				\$ -	\$ 1,500.00	\$ 782.80	\$ 717.20
Audit Fees	\$ -			\$ -				\$ -				\$ -	\$ 4,000.00			\$ 4,000.00				\$ -				\$ -	\$ 4,000.00	\$ -	\$ 4,000.00
Travel & Training	\$ 1,000.00			\$ 1,000.00				\$ -				\$ -				\$ -				\$ -				\$ -	\$ 1,000.00	\$ -	\$ 1,000.00
Loan Reserves	\$ -			\$ -				\$ -				\$ -	\$ 34,165.00			\$ 34,165.00	\$ 15,395.00			\$ 15,395.00				\$ -	\$ 49,560.00	\$ -	\$ 49,560.00
Bond Counsel & Related Costs				\$ -				\$ -				\$ -	\$ 11,000.00			\$ 11,000.00				\$ -				\$ -	\$ 11,000.00	\$ -	\$ 11,000.00
				\$ -				\$ -				\$ -				\$ -				\$ -				\$ -	\$ -	\$ -	\$ -
Total Administrative Costs	\$ 28,917.00	\$ 13,478.20	\$ -	\$ 15,438.80	\$ 6,716.31	\$ 6,385.56	\$ 330.75	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 54,665.00	\$ -	\$ -	\$ 54,665.00	\$ 15,395.00	\$ -	\$ -	\$ 15,395.00	\$ 6,000.00	\$ 6,000.00	\$ -	\$ -	\$ 111,693.31	\$ 26,194.51	\$ 85,498.80
ACTIVITY COSTS:																											
Easement Support				\$ -				\$ -				\$ -				\$ -				\$ -	\$ 1,000.25	\$ 1,000.25		\$ -	\$ 1,000.25	\$ 1,000.25	\$ -
Preliminary Design	\$ 26,537.39	\$ 26,537.39		\$ -	\$ 35,035.37	\$ 35,035.37		\$ -				\$ -				\$ -				\$ -				\$ -	\$ 61,572.76	\$ 61,572.76	\$ -
Phased Project Design (LS Design & Bidding)				\$ -				\$ -				\$ -				\$ -				\$ -	\$ 8,750.38	\$ 8,750.38		\$ -	\$ 8,750.38	\$ 8,750.38	\$ -
Final Design	\$ 7,866.61	\$ 1,936.00		\$ 5,930.61	\$ 35,551.57	\$ 35,551.57		\$ -				\$ -				\$ -				\$ -				\$ -	\$ 43,418.18	\$ 37,487.57	\$ 6,930.61
Construction Engineering (CN Management & Post Construction)	\$ 43,000.00	\$ 10,556.93		\$ 32,443.07	\$ 1,635.39		\$ 1,635.39	\$ -				\$ -	\$ 2,000.00			\$ 2,000.00				\$ -	\$ 16,400.00	\$ 16,400.00		\$ -	\$ 63,035.39	\$ 28,592.32	\$ 34,443.07
Resident Project Representative (RPR)	\$ 9,185.96	\$ 9,185.96		\$ -				\$ -				\$ -	\$ 55,814.04			\$ -				\$ -	\$ 20,000.00	\$ 20,000.00		\$ -	\$ 85,000.00	\$ 29,185.96	\$ 55,814.04
Permitting & DEQ Coordination	\$ 22,149.50	\$ 22,149.00		\$ 0.50	\$ 1,027.50	\$ 1,027.50		\$ -				\$ -				\$ -				\$ -	\$ 5,850.00	\$ 5,850.00		\$ -	\$ 29,027.00	\$ 29,026.50	\$ 0.50
Construction - Lift Station	\$ 3,361.65		\$ 3,361.65	\$ -	\$ 8,033.86		\$ 8,033.86	\$ -				\$ -				\$ -				\$ -	\$ 166,862.12	\$ 171,617.15	\$ 25,244.97	\$ -	\$ 208,257.63	\$ 208,257.63	\$ -
Construction - Treatment	\$ 338,494.04			\$ 338,494.04				\$ -	\$ 166,200.00			\$ 166,200.00	\$ 386,320.96			\$ 386,320.96	\$ 86,013.00			\$ 86,013.00				\$ -	\$ 977,028.00	\$ -	\$ 977,028.00
Construction - Packaged Treatment System	\$ 238,000.00	\$ 59,500.00		\$ 178,500.00				\$ -				\$ -				\$ -				\$ -				\$ -	\$ 238,000.00	\$ 59,500.00	\$ 178,500.00
DEQ Discharge Application Fee				\$ -	\$ 12,000.00	\$ 12,000.00		\$ -				\$ -				\$ -				\$ -				\$ -	\$ 12,000.00	\$ 12,000.00	\$ -
GWE Advertising Reimbursement				\$ -				\$ -				\$ -				\$ -				\$ -	\$ 137.25	\$ 137.25		\$ -	\$ 137.25	\$ 137.25	\$ -
Contingency	\$ 2,487.85			\$ 2,487.85	\$ -			\$ -				\$ -				\$ -	\$ 116,592.00			\$ 116,592.00				\$ -	\$ 119,079.85	\$ -	\$ 119,079.85
Total Activity Costs	\$ 691,083.00	\$ 129,665.28	\$ 3,361.65	\$ 557,856.07	\$ 93,283.69	\$ 83,614.44	\$ 9,669.25	\$ -	\$ 166,200.00	\$ -	\$ -	\$ 166,200.00	\$ 444,135.00	\$ -	\$ -	\$ 444,135.00	\$ 202,605.00	\$ -	\$ -	\$ 202,605.00	\$ 249,000.00	\$ 223,755.03	\$ 25,244.97	\$ -	\$ 1,846,306.69	\$ 475,510.62	\$ 1,370,796.07
TOTAL PROJECT COSTS	\$ 720,000.00	\$ 143,343.48	\$ 3,361.65	\$ 573,294.87	\$ 100,000.00	\$ 90,000.00	\$ 10,000.00	\$ -	\$ 166,200.00	\$ -	\$ -	\$ 166,200.00	\$ 498,800.00	\$ -	\$ -	\$ 498,800.00	\$ 218,000.00	\$ -	\$ -	\$ 218,000.00	\$ 255,000.00	\$ 229,755.03	\$ 25,244.97	\$ -	\$ 1,958,000.00	\$ 501,705.13	\$ 1,456,294.87
				\$ 146,705.13				\$ 100,000.00				\$ -				\$ -				\$ -				\$ 255,000.00		25.6%	
uniblack2.xls																											